REMARKS

Claims 1-24 have been examined and stand rejected. By the above amendments, claims 1, 3-10, 12-18, and 20-23 have been amended, and claims 2, 11, and 19 have been canceled. Accordingly, claims 1, 3-10, 12-18, and 20-24 now are pending in the subject application. Favorable reconsideration of the application and allowance of all of the pending claims are respectfully requested in view of the above amendments and the following remarks.

Claims 1-24 stand rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1 and 14 of U.S. Patent No. 7,020,814. To obviate this rejection, Applicant submits concurrently herewith a Terminal Disclaimer and the associated fee.

Claims 1, 2, 4-6, 9, 11-14, 17, and 19-22 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Publication No. 2003/0074449 to Smith et al. in view of U.S. Patent Publication No. 2004/0114924 to Holness et al. Further, claims 3, 10, and 18 stand rejected as being unpatentable over Smith, Holness, and U.S. Patent No. 7,298,694 to Kamiya, and claims 7, 8, 15, 16, 23, and 24 stand rejected as being unpatentable over Smith, Holness, and U.S. Patent Publication No. 2005/0058064 to Phelps et al. Applicant respectfully traverses these rejections insofar as they apply to the amended claims.

Applicant's claims are directed to a method and apparatus for efficient link recovery between first and second Fibre Channel ports communicating by the transport of GFP-encapsulated Fibre Channel client data frames across a SONET/SDH transport network. Conventionally, when a SONET/SDH network interruption occurs, the Fibre Channel ports communicating over the network do not begin the procedures for reestablishing the Fibre Channel link until a timeout occurs, which can be several seconds. According to the invention, the transport interfaces that connect the Fibre Channel ports to the SONET/SDH transport network are configured to quickly notify their respective Fibre Channel ports of an interruption in the SONET/SDH transport network, which causes the Fibre Channel ports to begin performing link initialization and buffer credit recovery procedures to recover the link, resulting in a much faster recovery from the link failure.

Each of Applicant's independent claims sets forth the particular mechanism used by the transport interfaces to accomplish the rapid recovery of the Fibre Channel link. For example, claim 1 requires a first transport interface, which connects a first Fibre Channel port to the SONET/SDH transport network, to poll a GFP synchronization status to determine whether a GFP loss of synchronization has occurred. The GFP loss of synchronization signifies an interruption in the SONET/SDH transport network. Claim 1 further requires the first transport interface to transmit a stream of Ordered Sets to the first Fibre Channel port in response to detecting a GFP loss of synchronization. The stream of Ordered Sets indicates to the first Fibre Channel port an interruption in the SONET/SDH transport network between said first and second transport interfaces. Claim 1 further requires the first Fibre Channel port to perform link initialization and buffer credit recovery procedures in response to receiving the stream of Ordered Sets from the first transport interface to restore communication with the second Fibre Channel port. Independent claims 9 and 17 include analogous requirements.

Before addressing the prior art, a few points about the claims are worth mentioning. First, as explained in the background section of Applicant's disclosure, the overall architecture of Fibre Channel ports communicating by the transport of GFP-encapsulated Fibre Channel client data frames across a SONET/SDH transport network is known. Moreover, "ordered sets" are a standard mechanism in Fibre Channel schemes and protocols, including the "not operational ordered set" (see, e.g., paragraph [0127] of Smith).

However, Applicant is not attempting to claim the use of "ordered sets" or "not operational ordered sets" *per se*. Rather, Applicant's claims require the transport interface to identify a SONET/SDH transport network using the specific mechanism of polling a GFP synchronization status to determine whether a GFP loss of synchronization has occurred. The claims further require, in response to a GFP loss of synchronization, the transport interface to transmit a stream of Ordered Sets to the Fibre Channel port it connects to the SONET/SDH transport network to indicate an interruption in the SONET/SDH transport network. Finally, the claims require that this stream of Ordered Sets causes the Fibre Channel port to perform link initialization and buffer credit recovery procedures to recover the link. Note that the stream of Ordered Sets is transmitted by transport interface, not by the Fibre Channel port. Note further

that the transport interface transmits the stream of Ordered Sets to the local Fibre Channel port, not to the far-end transport interface or the far-end Fibre Channel port (i.e., the first transport interface transmits to the first Fibre Channel port).

With the foregoing in mind, it can be better appreciated that Smith's disclosure, and in particular the passages focused on by the Examiner, are essentially background material that establish the basic framework for supporting Fibre Channel links over a SONET/SDH network (e.g., use of buffer-to-buffer flow control, buffer credit link flow control, use of GFP framing, types of ordered sets, etc.). However, the link recovery mechanism set forth in Applicant's claims is completely absent from Smith's disclosure. Specifically, Smith merely explains that the various types of ordered sets exist and can be sent between Fibre channel ports at end points to improve or maintain the transmission characteristics of the Fibre Channel link. Smith does not disclose or suggest that a transport interface can transmit an ordered set, much less a stream of ordered sets as required by the claims. Moreover, Smith does not disclose or suggest that a transport interface transmits an ordered set to the Fibre Channel port it connects to the SONET/SDH network. Smith refers to Fibre Channel ordered sets only in the context of signaling between endpoint Fibre Channel ports. The claims require using ordered sets in a manner not contemplated by Smith, i.e., for conveying information from a transport interface to a Fibre Channel port connected to the network by the transport interface.

As the Examiner acknowledges, Smith does not disclose a transport interface polling a GFP synchronization status to determine whether a GFP loss of synchronization has occurred, wherein the GFP loss of synchronization signifies an interruption in the SONET/SDH transport network. While Smith mentions GFP framing, the claimed mechanism for detecting an interruption is simply not disclosed by Smith. Furthermore, the claims require the first transport interface to transmit a stream of Ordered Sets to the first Fibre Channel port in response to detecting a GFP loss of synchronization, which causes the first Fibre Channel port to perform link initialization and buffer credit recovery procedures to recover the link with the second Fibre Channel port. In other words, the sending of the stream of ordered sets from the transport interface which detected the interruption to the Fibre Channel port signifies to the Fibre Channel port that it should begin recovery procedures. There is simply no disclosure in Smith of

transmitting a stream of ordered sets to a Fibre Channel port to cause the Fibre Channel port to begin recovery procedures, much less transmitting such a stream from a near-end transport interface that detected the problem. There is nothing in Smith that suggests that a stream of ordered sets can be interpreted or used as a command or instruction to begin recovery procedures in a Fibre Channel port and nothing in Smith that suggests any ordered set or stream of ordered sets is sent by a transport interface in response to the transport interface detecting a loss of GFP synchronization.

Holness does not compensate for the deficiencies of Smith, and this is evident from the passage cited by the Examiner from paragraph [0071] of Holness. The signaling described in this passage occurs between edge service switches (ESSs) at opposite ends of the network. Specifically, a near-end ESS transmits service remote fault (SRF) signals to a far-end ESS, and the far-end ESS transmits SRF signals to the near-end SRF. Presumably, the Examiner equates these ESSs with the claimed transport interfaces, given the location and operation of the ESSs described by Holness (see, e.g., Figs. 1, 2, 4, and 6 and related text). However, unlike Applicant's claims, which require transmitting signals indicating an interruption from the first transport interface to the first Fibre Channel port, Holness does not disclose or suggest transmitting any such signals from the near-end or far-end ESSs to their respective Fibre Channel ports. In Holness, this would require sending the SRF signals from an ESS to beyond the "demarcation" shown in the various figures, which is where a Fibre Channel port would lie. However, it is clear from the disclosure of Holness that all of the service-related messages travel exclusively over the service management channel 24 over the transport facility 26 (see Fig. 2 and paragraphs [0032-33], [0044-48]). The ESSs are the devices by which network monitoring and management are performed in Holness. There is no suggestion whatsoever in Holness that an ESS sends any sort of signal or message to a Fibre Channel port to notify the Fibre Channel port of a GFP loss of synchronization or an interruption in the SONET/SDH transport network or that an ESS transmits any signal or message, in response to its own detection of a loss of synchronization, that causes a Fibre Channel port to perform link initialization and buffer credit recovery. Moreover, there is no disclosure or suggestion in Holness that an ESS generates a stream of Fibre Channel ordered sets indicating an interruption in the SONET/SDH network in

response to a GFP loss of synchronization. The SRF signal cited by the Examiner in Holness is not a stream of ordered sets, and since the SRF signal is not destined for a Fibre Channel port, it would not make sense to adapt the SRF signal of Holness to be a stream of ordered sets (which, as the Examiner has pointed out, are part of the Fibre Channel protocol).

Since neither Smith nor Holness discloses or suggests these requirements of Applicant's independent claims, the subject matter of Applicant's independent claims would not have been obvious from any combination of Smith and Holness. Moreover, Kamiya and Phelps are relied upon merely for subject matter recited in specific dependent claims and also do not disclose or suggest the requirements of Applicant's independent claims described above. Accordingly, the subject matter of Applicant's independent claims and their dependent claims would not have been obvious from any combination of the cited prior documents, and the Examiner is respectfully requested to reconsider and withdraw these rejections.

In view of the foregoing, Applicant respectfully requests the Examiner to find the application to be in condition for allowance with claims 1, 3-10, 12-18, and 20-24. However, if for any reason the Examiner feels that the application is not now in condition for allowance, the Examiner is respectfully requested to call the undersigned attorney to discuss any unresolved issues and to expedite the disposition of the application.

Filed concurrently herewith is a Request for Continued Examination (RCE) and the associated fee. Applicant hereby petitions for any extension of time that may be necessary to maintain the pendency of this application. The Commissioner is hereby authorized to charge payment of any additional fees required for the above-identified application or credit any overpayment to Deposit Account No. 05-0460.

Dated: March 9, 2009

Respectfully submitted by:

/Patrick J. Finnan/

Patrick J. Finnan
Reg. No. 39189

EDELL, SHAPIRO & FINNAN, LLC
CUSTOMER NO. 27896
1901 Research Boulevard, Suite 400
Rockville, MD 20850
(301) 424-3640